

Claims

1. A four-directional forklift truck comprising a chassis having two front wheels and one rear wheel, each wheel being directionally adjustable by rotation about a substantially vertical axis, and a respective motor for driving each wheel selectively in either one of two opposite directions of rotation, wherein the truck is operable in a carousel mode wherein the three wheels are set at respective directions in which their axes of rotation intersect at a substantially common vertical axis equidistant from each wheel and all three wheels are driven, whereby the truck rotates substantially about the said common vertical axis.
- 15 2. A forklift truck as claimed in claim 1, wherein each wheel motor is a hydrostatic motor, the truck further including a hydraulic circuit for supplying hydraulic fluid under pressure to each motor.
- 20 3. A forklift truck as claimed in claim 2, wherein each motor has first and second hydraulic fluid inlet ports, the application of hydraulic fluid under pressure to the first inlet port driving the wheel in one direction and the application of hydraulic fluid under pressure to the second inlet port driving the wheel in the opposite direction, and wherein the hydraulic circuit comprises a source of hydraulic fluid under pressure having first and second fluid supply ports, the hydraulic fluid under pressure being selectively supplied at the first or second supply port.

4. A forklift truck as claimed in claim 3, in which the first and second inlet ports of at least one front wheel are coupled to the first and second supply ports via a respective selectively actuatable switchover valve, and in
5 which the first and second inlet ports of the other wheel(s) are non-switchably coupled to the first and second supply ports respectively, wherein when the truck is operated in standard mode the switchover valve is not actuated, when the truck is operated in sideways mode the
10 switchover valve is actuated, and when the truck is operated in carousel mode the switchover valve is not actuated.

5. A forklift truck as claimed in claim 4, wherein the
15 first and second inlet ports of only the said one front wheel are coupled to the first and second supply ports via a switchover valve whereby in the carousel mode the rear wheel and the said one front wheel drive the truck about the common vertical axis in a given direction of
20 rotation against the action of the other front wheel tending to drive the truck in the other direction of rotation.

6. A forklift truck as claimed in claim 4, wherein the
25 first and second inlet ports of the other front wheel are coupled to the first and second supply ports via a respective further switchover valve, the further switchover valve not being actuated in the standard and sideways modes but being actuated in carousel mode,
30 whereby in the carousel mode all three wheels drive the truck about the common vertical axis in a given direction of rotation.

7. A forklift truck as claimed in claim 4, 5 or 6, wherein the truck enters the carousel mode from sideways mode by de-actuating the switchover valve when the front 5 wheels are steered through a sufficient angle to set the three wheels at respective directions in which their axes of rotation intersect at the said substantially common vertical axis.

10 8. A four-directional forklift truck comprising:
a chassis having two front wheels and one rear wheel, each wheel being directionally adjustable by rotation about a substantially vertical axis,
a respective hydrostatic motor for driving each 15 wheel selectively in either one of two opposite directions of rotation, each motor having first and second hydraulic fluid inlet ports, the application of hydraulic fluid under pressure to the first inlet port driving the wheel in one direction and the application of hydraulic fluid under pressure to the second inlet port 20 driving the wheel in the opposite direction, and
a hydraulic circuit comprising a source of hydraulic fluid under pressure having first and second fluid supply ports, the hydraulic fluid under pressure being 25 selectively supplied at the first or second supply port, the first and second inlet ports of at least one front wheel being coupled to the first and second supply ports via a respective selectively actuatable switchover valve and the first and second inlet ports of the other 30 wheel(s) being non-switchably coupled to the first and second supply ports respectively,

wherein when the truck is operated in standard mode the switchover valve is not actuated, the front wheels are set substantially in the front-to-rear direction of the chassis, and the rear wheel is steerable to turn the

5 truck in the required direction, and

wherein when the truck is operated in sideways mode the switchover valve is actuated, the rear wheel is set substantially normal to the front-to-rear direction of the chassis, and the front wheels are steerable

10 simultaneously in opposite directions of rotation, the truck further being operable in a carousel mode in which the switchover valve is not actuated, the three wheels are set at respective directions in which their axes of rotation intersect at a substantially common

15 vertical axis equidistant from each wheel, and all three wheels are driven, whereby the truck rotates substantially about the said common vertical axis.